

The opinion in support of the decision being entered today is *not* binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MARK N. HEFLIN, JAMES B. STEWART,  
and SAMUEL L. KAESEMEYER

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Appeal 2007-1014  
Application 10/715,243  
Technology Center 3600

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Decided: June 19, 2007

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Before DONALD E. ADAMS, DEMETRA J. MILLS, and NANCY J.  
LINCK, *Administrative Patent Judges*.

MILLS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from a final rejection of claims 1 and 6-13 under 35 U.S.C. § 134. Claims 2-5, 14, and 15 have been indicated by the Examiner to contain allowable subject matter. (Br. 5.) We have jurisdiction under 35 U.S.C. § 6(b).

WE AFFIRM.

Claim 1 is representative:

1. A device for severing an extraction line connected between a cargo load and an extraction parachute when the cargo load fails to eject from an aircraft, the device comprising:

a cutter spaced from and spring-biased in the direction of the extraction line;

a housing for the cutter;

means for mechanically restricting the cutter from engaging and severing the extraction line; and

means responsive to a radio signal from a transmitter on the aircraft for disabling the restricting means so that the cutter is released and severs the extraction line.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Kenzie	US 4,513,931	Apr. 30, 1985
Underwood	US 5,816,535	Oct. 6, 1998
Tillman	US 6,578,885 B1	Jun. 17, 2003

## ISSUES

The ultimate issue before us is: Would Appellants' claimed "device for severing an extraction line," including their spring-biased cutter, mechanical restricting means, and means responsive to a radio signal for releasing the cutter, have been obvious based on the combined teachings of Underwood, Kenzie, and Tillman? One key underlying issue is whether it would have been obvious to use a radio control mechanical release element from one field of endeavor to control a mechanical release element in another field of endeavor.

### Background

The claimed invention relates to a device for aerial cargo unloading by parachute extraction. In the past, airdrop cargo loads have been extracted from the aircraft by one or more 28-foot extraction parachutes. "At times, the cargo has failed to be drawn from the aircraft because of human error, aircraft lock malfunction, or parachute material damage. When a failure or malfunction occurs, the extraction parachute is left trailing behind the aircraft. The parachute can generate drag forces high enough to stall the aircraft. The cargo handler must go behind the load and use a knife to manually cut the extraction line." (Specification 1.) This type of maneuver is extremely dangerous and potentially life-threatening. When more than one extraction parachute is used, the aircraft must proceed to the nearest airfield for an emergency landing. Thus an object of this invention to allow safe, easy release of extraction parachutes in case of an airdrop malfunction. (*Id.*)

## DISCUSSION

### Obviousness Rejection

Claims 1 and 6-13 stand rejected under 35 U.S.C. § 103(a) over Underwood in view of Kenzie and Tillman.

Appellants do not argue individual claims separately. Therefore, the claims stand or fall together. 37 C.F.R. § 41.37 (c)(1)(vii).

The Examiner contends

Underwood et al teaches a device that is used to cut the extraction line of the parachute in case of an emergency but is silent on the radio signal to initiate a cutter that is spring biased to cut the extraction line and means to restrict the cutter from cutting the extraction line. However, Kenzie teaches that a device to restrict a cutter from cutting a line 20 is well known in the art. Furthermore, Tillman discloses that [the use of a] radio controlled system to operate a device is well known in the art.

(Final Rejection 2.)

The Examiner concludes

It would have been obvious to one skilled in the art at the time the invention was made to have used a remotely controlled cutter system that is spring biased to cut the extraction line and means to restrict the cutter from cutting the extraction line in place of Underwood et al's system as taught by Kenzie as a substitution of parts.

(Final Rejection 2.)

Appellants, however, contend that Kenzie does not remedy Underwood's deficiencies because Kenzie does not disclose the recited element of a spring-biased line cutter. (Br. 12.)

Appellants contend that

Kenzie has no spring that biases his knife 48 toward anything. His knife 48 is simply held in a fixed location by a shear pin 50 passing through the knife. The recited element of means for mechanically restricting a spring-biased line cutter from engaging and severing the extraction line is not shown. Kenzie has no knife restricting means -- Kenzie's shear pin 50 does not restrict the knife 48 from engaging and severing the

line. It only holds the knife 48 in a fixed location. The knife 48 is not biased towards the line. The recited element of means responsive to a radio signal from a transmitter on the aircraft for disabling the restricting means so that the cutter is released and severs the extraction line is not shown. Kenzie has no knife restricting means. Therefore, it has no means for disabling one, and certainly no radio-signal responsive means for disabling one.

(Br. 12.)

We find the Examiner has presented sufficient evidence to support a prima facie case of obviousness.

In particular, Underwood teaches a control system for the emergency jettison of a cargo container extraction parachute from a cargo container. (Abstract). Underwood teaches that the parachute jettison or release system includes a microprocessor which couples electrical power to line cutters via line assemblies. (Underwood, col. 5, ll. 55-60.) Underwood also provides for an emergency backup jettison procedure to allow the system to respond to an emergency jettison request by an automatic jettison or a manual jettison command. (Underwood, col. 6, ll. 2-6.) Thus, Underwood provides for an emergency manual override of the electrically controlled parachute jettison system.

Kenzie also teaches a device to dispatch cargo loads from aircraft. (Kenzie, col. 1, ll. 8-9.) In the device of Kenzie a knife is urged by a preloaded spring to cut the reefing line which regulates parachute opening and fully releases the parachute canopy. Abstract. In particular the parachute release system has a timing mechanism (Kenzie, col. 3, line 18) including a release "pin 82 [which] is held against the bias of the spring 84

by insertion of the firing pin 126 which moves the sprag 116 into engagement with one of the teeth 114." The sprag includes a projection pin 120 engaged with notch 128 of the firing pin. (Kenzie, col. 3, ll. 30-34.) Eventually, opening of the parachute releases the firing pin (Kenzie, col. 4, ll. 16-25) and the timing mechanism releases the stored energy of a spring 60, which is sufficient to break the shear pin 50 and drive the knife edge through the reefing line providing for release of the parachute canopy (Kenzie, col. 4, ll. 32-39; col. 5, ll. 61-65; col. 6, ll. 35-40). Thus, Kenzie teaches several mechanical means for mechanically restricting the cutter from engaging and severing the extraction line including the projection pin 120 of the sprag associated with notch 128 of the firing pin, and the timing mechanism releasing spring 60 which cuts the reefing line. Thus Kenzie teaches that a mechanical release mechanism with a holding position and release position is well known in the art.

The Examiner further acknowledges that Underwood and Kenzie are silent as to the use of a radio signal to initiate a cutter that is spring biased to cut the extraction line and means to restrict the cutter from cutting the extraction line. However, Tillman discloses a rope release device which is radio controlled. The rope release is a latched system with latched and unlatched positions. Upon the receipt of a radio signal, a solenoid is actuated to displace mechanical armature which displaces a kicker arm which disengages a locking arm, and the force of a biasing spring moves a shaft and cam about a pin against the bias of a torsion spring and thus releases the shaft. (Kenzie, col. 7, ll. 44-55; claims 26 and 29.) Therefore, Tillman essentially describes radio controlled release of a mechanical latch

system having a holding and release position and a biasing spring, comprising similar mechanical components as the release system of Kenzie. We find that one of ordinary skill in the art would have recognized that the mechanical release system of Kenzie could have been radio-controlled.

We disagree with Appellants' argument that Kenzie's shear pin 50 does not restrict the knife 48 from engaging and severing the line. (Br. 12.) The shear pin restricts the knife until the pin is broken by the stored energy of spring 60. (Kenzie, col. 4, ll. 32-39; col. 5, ll. 61-65; col. 6, ll. 35-40.)

We also disagree with Appellants' argument that Kenzie has no knife restricting means which can be radio controlled. (Br. 12.) As stated herein, Kenzie teaches several mechanical means for mechanically restricting the cutter from engaging and severing the extraction line, including the projection pin 120 of the sprag associated with notch 128 of the firing pin, and the timing mechanism releasing spring 60 which cuts the reefing line. One of ordinary skill in the art would have understood that the firing pin and the timing mechanism of Kenzie could be radio controlled in the same manner that the solenoid controls the armature and kicker arm in the release mechanism of Tillman.

Recently, the Supreme Court indicated in *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731, 82 USPQ2d 1385, 1389 (2007), that

[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. ...[A] court must ask whether the improvement is

more than the predictable use of prior art elements according to their established functions.

"Often, it will be necessary to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *See id.* at 1740, 82 USPQ2d at 1389.

In the present case, Tillman provides one of ordinary skill in the art with knowledge that one can release a mechanical latch system using a radio controller. In our view, one of ordinary skill in the art would have recognized the established function of a radio control to release a mechanical latch system and predictably would have applied it to improve the mechanical latch system of Kenzie.

Appellants argue that the "combination of references would require a substantial reconstruction and redesign of the elements shown in Underwood as well as a chain in the basic principle under which the Underwood construction was designated to operate." (Br. 14.) [Emphasis omitted.]

However, the Supreme Court also indicated in *KSR* that "the [§ 103] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 127 S.Ct. at 1731, 82 USPQ2d at 1396. The Court also observed that a "person of ordinary skill is also a person of ordinary creativity, not an automaton." *See id.* at 1742, USPQ2d at 1397.



Consistent with the discussion herein, we find a person of ordinary skill in the art would have possessed the background knowledge and apparent reason to adapt the teachings of Kenzie and Tillman into the parachute jettison system of Underwood without undue experimentation.

In view of the above, we affirm the obviousness rejection of the claims over Underwood in view of Kenzie and Tillman.

#### DECISION

The Examiner's rejection of claims 1, and 6-13 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

#### AFFIRMED

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